

ABSTRACT OF THE DISCLOSURE

A method of using a metal complex as an n-dopant for doping an organic semiconducting matrix material in order to alter the latter's electrical characteristics is provided. In order to provide n-doped organic semiconductors with matrix materials having a low reduction potential, while achieving high conductivities, the n-dopant is a neutral electron-rich metal complex with a neutral or charged transition metal atom as a central atom and having at least 16 valence electrons. The complex can be polynuclear and can possess at least one metal-metal bond. At least one ligand can form a  $\pi$  complex with the central atom, which can be a bridge ligand, or it can contain at least one carbanion-carbon atom or a divalent atom. Methods for providing the novel n-dopants are provided.